

31 and the resistors 21-23. At its output 29 it produces digital values for the through-flow determined.

In the claims:

Amend Claim 28 as follows:

53 28. (Amended) An electromagnetic flowmeter arrangement comprising a measuring tube, a coil arrangement for generating a magnetic field substantially perpendicular to the direction of flow through the measuring tube, an electrode arrangement substantially perpendicular to the direction of flow and to the magnetic field, a supply system for the coil arrangement which has a current direction change-over arrangement, and a testing device, the testing device including means which, after a change over of the current direction, determines at least one parameter of the rise in the current in the coil arrangement and compares the parameter with a given value.

32 Cancel Claim 32 without prejudice.

REMARKS

The Examiner's reconsideration of the application is urged in view of the correction above and comments which follow.

Turning first to numbered paragraph 2 on page 2 of the Office Action, the prior art identified is simply background prior art, and is not particularly relevant. The Examiner's lack of any consideration of the prior art is of no moment.

In numbered paragraph 3 on page 2 of the Office Action, the Examiner has objected to the drawings. With the simple amendment to page 7 of the specification, as set forth above (and in the attachment), it is submitted that everything is now in order, and no drawing correction is necessary.



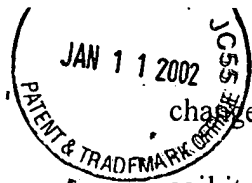
In numbered paragraph 5, the Examiner has rejected claims 18 through 35 as being indefinite, but the only problem stated was with respect to the checking unit which is claimed only in Claim 32. Accordingly, Claim 32 has been deleted to eliminate that issue, and it is submitted that the remaining claims are clear and do not suffer the deficiency noted by the Examiner in numbered paragraph 5.

In the numbered paragraph 6 of the Office Action, the Examiner has rejected Claims 28-35 under 35 U.S.C. § 112 as being indefinite because Claim 28 did not have a transitional phrase. While that rejection is not understood, since the word "having" formerly in Claim 28 is a transitional phrase, that word has been changed to "comprising", and it is therefore submitted that claims are now in proper form.

In numbered paragraph 8 beginning on 3 of the Office Action, the Examiner has rejected Claims 18 through 35 under U.S.C. § 102 as allegedly being anticipated by Gaertner U.S. Patent number 4,784,000. Reconsideration is requested.

There is no question but that Gaertner discloses a device which is similar to the device which is of the present invention. That, however, is the extent of the similarity, since the present invention is directed to a method for testing an electromagnetic flowmeter, and the resulting flowmeter arrangement, and Gaertner discloses no such method or apparatus.

As the Examiner has indicated, in column 9 Gaertner does disclose a checking method, but the method is fundamentally different than the testing method of the present invention. The purpose of the Gaertner invention is to create a constant amplitude current through the coil during the measuring period of the flowmeter. As Gaertner explains, the constant amplitude is created by measuring the coil current at two instances within the same time period, and then comparing the amplitudes of the two currents. If those amplitudes differ, Gaertner then shortens or enlarges the duration of the high-voltage period shown in Figure 4. Thus, Gaertner can compensate for voltage



changes, such as reduced voltages caused by long cables. Also, a change in the self-induction of the coil itself could be compensated using this method, thus generating the constant current desired.

Gaertner, however, does not make any determination about any change in the coil itself. In other words, Gaertner cannot determine whether the magnetic behavior of the coil is the same as when the coil was manufactured. Gaertner's method cannot provide any information about the dynamic magnetic behavior of the coil.

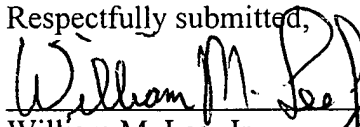
The present invention determines "at least one parameters of the current rise" (Claim 18) or "at least one parameter of the rise in the current in the coil arrangement" (Claim 28). In Gaertner, however, measured only are the amplitudes, and not any parameters of the current rise. As one skilled in the art will appreciate, detecting the current rise behavior provides information about changed self-inductance, and therefore changed magnetic behavior. Thus, it is submitted that, upon reconsideration, the independent claims are patentably distinguished from Gaertner, since the method is fundamentally different from that of Gaertner.

Claim 20 introduces yet a further difference. Claim 20 requires that the reference value be determined from the flowmeter at an earlier time. In contrast, Gaertner measures the constant amplitude at two instances within the same time period. The reference value of the present invention is not determined for a sample during the same current pulse at which the measurement is also taken. The measurement of the current pulse is compared with a reference value that could have been measured much earlier, such as a year earlier, but certainly not at the same time as occurs in Gaertner. Therefore, it is submitted that Claim 20, which depends on Claim 18, is also allowable in its own right.



Given the forgoing, it is submitted that Claim 18 and 28 distinguish from, and are allowable over, the Gaertner reference. As the remaining claims depend from either Claim 18 or 28, those claims are submitted to be allowable, as well. The Examiner's further and favorable reconsideration is therefore urged.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Page 7, lines 1 - 5:

For the rest, the measuring electrodes 5,6 are connected to a differential amplifier 27, the output of which is connected to an analogue-to-digital converter 28. The analogue-to-digital converter 28 is supplied from the same reference voltage source 24 as the voltage divider comprising the resistors 21-23. At its output 29 it produces digital values for the through-flow determined.

Claims:

28. (Amended) An electromagnetic flowmeter arrangement [having] comprising a measuring tube, a coil arrangement for generating a magnetic field substantially perpendicular to the direction of flow through the measuring tube, an electrode arrangement substantially perpendicular to the direction of flow and to the magnetic field, a supply system for the coil arrangement which has a current direction change-over arrangement, and a testing device, the testing device including means which, after a change over of the current direction, determines at least one parameter of the rise in the current in the coil arrangement and compares the parameter with a given value.